

Patent Application  
ATM-515 (7486)

**Section I (Amendments to the Claims)**

Please amend claims 13, 18, 19 and 21, as set out in the listing of claims 1-46 below.

1. (Previously presented) A process for improving delivery reproducibility of a cyclosiloxane precursor to a chemical vapor deposition reactor and reducing water content in the cyclosiloxane precursor, the process comprising the steps of:
  - (a) providing a cyclosiloxane precursor;
  - (b) treating and contacting the cyclosiloxane precursor with at least one adsorbent bed material that has an affinity for water and at least one impurity selected from the group consisting of acidic and basic impurities from said cyclosiloxane precursor for a sufficient time to reduce the water and impurities in the cyclosiloxane precursor;
  - (c) separating the cyclosiloxane precursor from the at least one adsorbent bed material, to produce a purified cyclosiloxane precursor, wherein the water content is less than 20 ppm;
  - (d) vaporizing the purified cyclosiloxane precursor; and
  - (e) delivering vapor of the purified cyclosiloxane precursor to said chemical vapor deposition reactor, wherein treatment of the cyclosiloxane precursor functions to prevent or minimize premature polymerization of the cyclosiloxane precursor in the chemical vapor deposition reactor and associated delivery lines and improves delivery reproducibility of the cyclosiloxane precursor.
2. (Cancelled).
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3. (Previously presented) The process according to claim 1, wherein said at least one impurity is acidic.
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4. (Previously presented) The process according to claim 1, wherein said at least one impurity is basic.
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5. (Previously presented) The process according to claim 1, wherein the cyclosiloxane precursor comprises the formula  $[RR'Si-O]_n$ , wherein each of R and R' is same or different and

Patent Application  
ATM-515 (7486)

independently selected from the group consisting of hydrogen, hydroxyl, C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>1</sub>-C<sub>8</sub> alkoxy, C<sub>1</sub>-C<sub>8</sub> alkene, C<sub>1</sub>-C<sub>8</sub> alkyne, and C<sub>1</sub>-C<sub>8</sub> carboxyl; and n is from 2 to 8.

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(Original) The process according to claim 1, wherein the cyclosiloxane precursor is selected from the group consisting of polyhedral oligomeric silsesquioxanes (POSS), octamethylcyclotetrasiloxane (OMCTS), hexamethylcyclotetrasiloxane (HMCTS), tetramethylcyclotetrasiloxane (TMCTS), and mixtures thereof.

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(Original) The process according to claim 1, wherein the cyclosiloxane precursor is 1,3,5,7-tetramethylcyclotetrasiloxane.

8.-9. (Cancelled).

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(Previously presented) The process according to claim 1, wherein the at least one adsorbent bed material is selected from the group consisting of: silica gel, molecular sieves, aluminum oxide, carbon, calcium oxide, calcium chloride, sodium sulfate, magnesium perchlorate, phosphorus pentoxide, silicide, metals, and metal hydrides.

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(Previously presented) The process according to claim 10, wherein the at least one adsorbent bed material is calcium oxide.

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(Previously presented) The process according to claim 10, wherein the at least one adsorbent bed material is calcium hydride.

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(Currently amended) The process according to claim 1-10, wherein the at least one adsorbent bed material comprises a combination of adsorbents.

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(Previously presented) The process according to claim 10, wherein the cyclosiloxane precursor is further contacted with a second adsorbent bed material.

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(Previously presented) The process according to claim 10, wherein the purified cyclosiloxane precursor is removed from the at least one adsorbent bed material by distillation.

Patent Application  
ATM-515 (7486)

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12. (Previously presented) The process according to claim 10, wherein the purified cyclosiloxane precursor is removed from the at least one adsorbent bed material by decantation.

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13. (Previously presented) The process according to claim 10, wherein the purified cyclosiloxane precursor is removed from the at least one adsorbent bed material by pump.

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14. (Currently amended) A process for ~~improving delivery reproducibility~~ of a cyclosiloxane precursor to a chemical vapor deposition reactor ~~by reducing water content and impurities in the cyclosiloxane precursor~~, the process comprising the steps of:

(a) providing a cyclosiloxane precursor;

(b) treating and contacting the cyclosiloxane precursor with at least one adsorbent bed material that has an affinity for water and at least one impurity selected from the group consisting of acidic and basic impurities from said cyclosiloxane precursor for a sufficient time to reduce the water and impurities in the cyclosiloxane precursor; and

(c) separating the cyclosiloxane precursor from the at least one adsorbent bed material, to produce a purified cyclosiloxane precursor wherein said purified cyclosiloxane precursor comprises < 0.001% of the at least one impurity.

15

15. (Currently amended) A process for ~~improving delivery reproducibility~~ of a cyclosiloxane precursor to a chemical vapor deposition reactor ~~by reducing water content and impurities in the cyclosiloxane precursor~~, the process comprising the steps of:

(a) treating and contacting the cyclosiloxane precursor with at least one adsorbent bed material that has an affinity for water and at least one impurity selected from the group consisting of acidic and basic impurities from said cyclosiloxane precursor for a sufficient time to reduce the water and impurities in the cyclosiloxane precursor; and

(b) separating the cyclosiloxane precursor from the at least one adsorbent bed material, to produce a purified cyclosiloxane precursor wherein said purified cyclosiloxane precursor comprises < 0.00001 % of the at least one impurity.

20. (Cancelled).

17

17. (Currently amended) A process for ~~improving delivery reproducibility~~ of a cyclosiloxane precursor to a chemical vapor deposition reactor ~~by reducing water content in the cyclosiloxane precursor~~, the process comprising the steps of:

Patent Application  
ATM-515 (7486)

(a) treating and contacting the cyclosiloxane precursor with at least one adsorbent bed material that has an affinity for water and at least one impurity selected from the group consisting of acidic and basic impurities from said cyclosiloxane precursor for a sufficient time to reduce the water and impurities in the cyclosiloxane precursor; and

(b) separating the cyclosiloxane precursor from the at least one adsorbent bed material, to produce a purified cyclosiloxane precursor wherein said purified cyclosiloxane precursor comprises less than 0.001% of water.

22- 46. (Canceled).